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Generative AI: Unlocking the future of fashion

While still nascent, generative AI has the potential to help fashion businesses become more productive, get to market faster, and serve customers better. The time to explore the technology is now.

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As this season's fashion weeks wrap up in London, Milan, New York, and Paris, brands are working to produce and sell the designs they've just showcased on runways—and they're starting next season's collections. In the future, it's entirely possible that those designs will blend the prowess of a creative director with the power of generative artificial intelligence (AI), helping to bring clothes and accessories to market faster, selling them more efficiently, and improving the customer experience.

By now, you've likely heard of OpenAI's ChatGPT, the AI chatbot that became an overnight sensation and sparked a digital race to build and release competitors. ChatGPT is only one consumer-friendly example of generative AI, a technology comprising algorithms that can be used to create new content, including audio, code, images, text, simulations, and videos. Rather than simply identifying and classifying information, generative AI creates new information by leveraging foundation models, which are deep learning models that can handle multiple complex tasks at the same time. Examples include GPT-3.5 and DALL-E. (For more on generative AI and machine learning, see "What is generative AI?"[1] and "Generative AI is here: How tools like ChatGPT could change your business."[2])

While the fashion industry has experimented with basic AI and other frontier technologies—the metaverse, nonfungible tokens (NFTs), digital IDs, and augmented or virtual reality come to mind—it has so far had little experience with generative AI. True, this nascent technology became broadly available only recently and is still rife with worrisome kinks and bugs, but all indications are that it could improve at lightning speed and become a game changer in many aspects of business. In the next three to five years, generative AI could add $150 billion, conservatively, and up to $275 billion to the apparel, fashion, and luxury

sectors' operating profits, according to McKinsey analysis. From codesigning to speeding content development processes, generative AI creates new space for creativity. It can input all forms of "unstructured" data—raw text, images, and video—and output new forms of media, ranging from fully-written scripts to 3-D designs and realistic virtual models for video campaigns.

These are still early days, but some clear use cases for generative AI in fashion have already emerged. (Many of these use cases also apply to the adjacent beauty and luxury sectors.) Within product innovation, marketing, and sales and customer experience in particular, the technology can have significant outcomes and may be more feasible to implement in the short term compared with other areas in the fashion value chain. In this article, we outline some of the most promising use cases and offer steps executives can take to get started, as well as risks to keep in mind when doing so.

In our view, generative AI is not just automation—it's about augmentation and acceleration. That means giving fashion professionals and creatives the technological tools to do certain tasks dramatically faster, freeing them up to spend more of their time doing things that only humans can do. It also means creating systems to serve customers better. Here's where to begin.

Understanding the use cases

Generative AI has the potential to affect the entire fashion ecosystem. Fashion companies can use the technology to help create better-selling designs, reduce marketing costs, hyperpersonalize customer communications, and speed up processes. It may also reshape supply chain and logistics, store operations, and organization and support functions (see sidebar, "Generative AI use cases in fashion").

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[1] "What is generative AI?" McKinsey, January 19, 2023.
[2] Michael Chui, Roger Roberts, and Lareina Yee, "Generative AI is here: How tools like ChatGPT could change your business," McKinsey, December 20, 2022.

Generative AI use cases in fashion

Foundation models and generative AI can be used across the fashion value chain.

— *Merchandising and product:*

- Convert sketches, mood boards, and descriptions into high-fidelity designs (for example, 3-D models of furniture and jewelry).

- Enrich product ideation by collaborating with AI agents that generate creative options (for example, new ideas, variations) from data (for example, past product lines, inspirational imagery and style).

- Customize products for individual consumers at scale (for example, eyeglasses based on facial topography).

— *Supply chain and logistics:*

- Support negotiations with suppliers by compiling research.

- Augment robotic automation for warehouse operations and inventory management through real-time analytics (for example, insights enabled by augmented reality, or AR).

- Tailor product return offers based on individual consumers.

— *Marketing:*

- Identify and predict trends to improve targeted marketing from unstructured data (for example, consumer sentiment, in-store consumer behavior, omnichannel data).

- Automate consumer segmentation at scale to tailor marketing initiatives.

- Generate personalized marketing content based on unstructured data from consumer profiles and community insights.

- Collaborate with AI agents to accelerate content development and reduce creative blocks for in-house marketing teams.

— *Digital commerce and consumer experience:*

- Structure and generate sales descriptions based on past successful sales posts.

- Personalize online consumer journey and offers (for example, web pages, product descriptions) based on individual consumer profiles.

- Tailor virtual product try-on and demos to individual consumers (for example, clothing try-on, styling recommendations).

- Enhance intelligent AI agents (for example, conversational chatbots, virtual assistants) and self-service to address advanced consumer inquiries (for example, multilingual support).

— *Store operations:*

- Optimize store layout planning by generating and testing layout plans under different parameters (for example, foot traffic, local consumer audience, size).

- Optimize in-store labor to avoid bottlenecks such as gaps in staff allocation and theft detection through real-time monitoring of video data.

- Support AR-assisted devices to better inform workforce in real time on product (for example, condition, assortment, inventory, recommendations).

— *Organization and support functions:*

- Coach sales associates to sustain successful "clienteling" relationships via real-time recommendations, feedback reports, and high-value consumer profiles.

- Develop individualized training content for employees based on role and performance.

- Enable self-serve and automate support tasks (for example, HR tickets, accounting for large documents, review of legal documents).

Product development and innovation

Instead of relying on trend reports and market analysis alone to inform designs for next season's collection, both mass-market fashion retailers and luxury brands' creative directors can use generative AI to analyze in real time various types of unstructured data. Generative AI can, for example, quickly aggregate and perform sentiment analysis from videos on social media or model trends from multiple sources of consumer data.

Creative directors and their teams could input sketches and desired details—such as fabrics, color palettes, and patterns—into a platform powered by generative AI that automatically creates an array of designs, thus allowing designers to play with an enormous variety of styles and looks. A team might then design new items based on these outputs, putting a fashion house's signature touch on each of the looks. This opens the door to creating innovative, limited-edition product drops that may also be collaborations between two brands. Products such as eyeglasses could be designed for individuals by using facial-recognition technology powered by generative AI to scan facial topography and adjust for a customer's size and style preferences.

This scenario became reality in December 2022, when a group of Hong Kong–based fashion designers from the Laboratory for Artificial Intelligence in Design (AiDLab) held a fashion show featuring generative-AI-supported designs.[3] Using tools from tech companies such as Cala, Designovel, and Fashable, fashion designers are already tapping into the power of generative AI to spark new ideas, try myriad design variations without having to produce expensive samples, and vastly accelerate their processes. (For beauty businesses, generative AI also provides an opportunity for brands to identify new product formulations, potentially helping to reduce lab testing costs.)

Marketing

Marketing executives and agencies can use generative AI to brainstorm campaign strategies, product campaign content, and even virtual avatars for every marketing channel—and do it fast.

Striking marketing gold can often be a numbers game. Consider TikTok: there's no single winning formula for going viral on the platform. Instead, the more you produce, the higher your chances are of becoming a trending topic and boosting brand awareness and sales. Prompting a generative-AI-powered video platform to create short-form videos for TikTok or other social-media platforms can help save time and costs associated with pumping out social-media content. Generative AI can recognize patterns and trends in viral content and create new content that also follows specifications from the marketer.

These exercises can help in-house marketing teams manage their workloads while reducing their reliance on outsourcing work to creative agencies. Marketers will want to be careful with this approach, however: trying to reach consumers by replicating what other brands have done can counteract the unique identity and value proposition that a brand spends years building.

Generative AI could also be applied to personalized customer communications. Companies that excel at personalization increase revenues by 40 percent compared with companies that don't leverage personalization, according to McKinsey research.[4]

Several start-ups—CopyAI, Jasper AI, and Writesonic, to name just a few—are helping pioneer personalized marketing at scale through generative AI. Using these tools, a marketer's daily tasks might start to look like this: they could choose the type of content they want to create, whether it's an email, a long-form blog post, or something

[3] "In Hong Kong, designers try out new assistant: AI fashion maven AiDA," Reuters, December 28, 2022.
[4] "The value of getting personalization right—or wrong—is multiplying," McKinsey, November 12, 2021.

else; add a prompt describing what they are looking for; and include the targeted audience and other parameters, such as tone, that help create marketing communications that are in line with the brand. The AI tool then offers several options from which the marketer can choose.

These tools are most helpful when applied to lower-funnel marketing channels (those that are mostly used to encourage sales conversions) as opposed to more prestigious brand-building communications. Marketers are still required to prompt and edit the work.

Sales and consumer experience

Today's generative-AI-powered chats, which use stronger natural-language processing to better understand and interact with humans, are already a measurable improvement over existing AI chats. That said, there isn't (yet) a foolproof generative-AI chatbot for businesses—current chatbots and other text-generating tools still occasionally make errors that could cause serious customer service disasters. Eventually, though, this technology could help customer support agents outsource complex inquiries—for example, using chatbots to help provide personalized responses in numerous languages.

Today, there are services that assign a generative AI "representative" to a brand to handle customer service queries across email, chat, text, and a brand's own platforms. These services help to reduce customer service wait times and improve response times.

Generative-AI agents can also serve luxury brands, particularly when it comes to "clienteling," a retail strategy whereby sales associates develop long-term relationships with a brand's highest-spending customers to encourage purchases and improve brand loyalty. (High-end brands can hit a sales conversion rate of 60 to 70 percent in luxury boutiques, through appointment-only

shopping, for example.[5]) That process has remained somewhat analog and manual, relying on brands' sales associates to reach out to customers through a variety of messaging platforms or texts, and is limited to only when those associates are working. Generative-AI-powered tools can keep the conversation going or make styling recommendations after a shopper leaves the store, coach sales associates on how to engage with customers, personalize communications for specific customers, and analyze consumer profiles and online real-time interaction.

In July 2022, apparel retailer Stitch Fix said it was experimenting with GPT-3 and DALL·E 2, the text-to-image AI generator, to boost sales and improve customer satisfaction with better styling services. These generative models are being tested to help stylists quickly and accurately interpret reams of customer feedback and curate products that customers would be likelier to purchase. For example, the AI tool could analyze all of a customer's feedback, which could include hundreds of text comments, email requests, product ratings, and online posts. If a customer regularly comments on, say, the "great fit" and "fun color" of a certain style of pants, DALL·E could generate images of similar pants that the customer would likely want to purchase. The stylist could then find similar items in Stitch Fix's inventory and recommend them to that customer.

Virtual try-ons are yet another example of how generative AI can improve sales and consumer experience. Paris-based Veesual enables virtual try-on integration for e-commerce fashion brands, meaning customers can choose their model and pick clothes to try on.

How to get started

As exciting as generative-AI technology might be, companies will still want to tread cautiously before entrusting any of their core tasks entirely

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[5] Miles Socha, "What to watch: Clienteling is the new black for Europe's luxury giants," *Women's Wear Daily*, January 4, 2023.

to generative AI. But neglecting to explore the possibilities that this technology offers could be just as risky, given the pace at which it is evolving and the explosive growth of the user base. Executives can start thinking now about how their businesses could use generative AI. There are a few steps leaders can take to begin.

Make value your North Star
Fashion leaders should outline where generative AI can offer the greatest value to their business. Start by noting which areas—creative design, merchandising, runway campaigns, or clienteling—could benefit the most from generative AI. Leaders can then prioritize the generative AI use cases they should pursue based on the level of impact the use cases may have on their business. Some measures of impact include improving customer satisfaction scores and reducing customer service wait times.

Once the value is identified, use cases should also be prioritized according to how feasible they are to implement; determining how seamlessly generative AI can be used will depend on things like a team's technical skills. Afterward, teams should build a short-term road map to test and validate these use cases. At the same time, they can also consider what long-term goals might include, such as how to build a generative-design platform that can be updated and used by designers for every season.

It may be tempting to have a bit of fun with generative AI, but harnessing its power will take extra diligence. Fashion executives must be intentional in building tools that can deliver value rather than experiment with existing tools indiscriminately.

Know risks and plan to mitigate them
In a previous article, we listed some of the risks of using generative AI. One is that the legal parameters around generative AI's use are still being ironed out. Designers are sometimes criticized for creating derivative works and copycat designs. Determining who owns the intellectual property and creative rights to AI-generated works, which could be

based on multimodal data sources such as other designers' past collections, will be decided on a case-by-case basis until there is a strong legal precedent. (Although it doesn't involve generative AI, the high-profile battle between Hermès and artist Mason Rothschild surrounding *MetaBirkin* NFTs, in which a judge ruled that the NFTs infringed on Hermès's trademark, shows how fashion brands can become embroiled in legal conundrums when new technologies emerge.)

Another risk is bias and fairness in generative-AI systems, particularly around biased data sets, which may present reputational challenges for brands that rely on the technology. For example, if an image-generating tool produces an advertising campaign with inappropriate or offensive images that are then shared globally, a brand's reputation could be hurt. And pointing fingers at the company AI in an attempt at damage control may do little to calm consumer ire.

There is also the risk that employees who use generative AI are not fully aware of its shortcomings and may fail to check for errors introduced by the technology. In this case, businesses must regularly train employees and provide them with the resources they need to understand how to use the technology.

While risks are unavoidable, executives can mitigate their potential impact by establishing a process to address risk, ethics, and quality assurance.

Upskill your current workforce
Generative-AI tools could add value to a host of different areas of a business, so it will be important to educate and train employees—including designers, marketers, sales associates, and customer service representatives—on the use of the technology.

Some businesses have already introduced AI-focused training. Levi Strauss, for one, launched a machine learning boot camp in 2021 to train nontech employees on how to use machine learning

in the company's design process. Employees who complete the program create new AI tools that are relevant to their work.[6] One of Levi's goals with the program is to increase the diversity of employees who have tech knowledge so that the company can uncover problems that employees who come from traditional technology backgrounds might otherwise miss. The program also helps teams with different specializations—such as design teams and engineering teams—communicate better and find common ground. Furthermore, Levi's has found that the program helps improves employee retention.[7]

With an AI-savvy workforce, collaboration will take on a new meaning. Leaders should consider: How do we define responsibilities and operate collectively between technical and nontechnical roles? Design and software engineering teams can set up weekly leadership meetings to strategize quarterly road maps and working sessions among teams. Design leads can share their needs for certain insights and tools (a tool that generates design variations from a sketch, perhaps), while engineering teams deliver those tools.

Partner with the right tech support

Fashion businesses will no doubt have to invest in their workforce when it comes to leveraging generative AI, but they won't have to build out applications or foundation models themselves. Instead, fashion leaders can partner with generative-AI businesses and experts to move quickly. A fashion executive might partner with a business (such as Microsoft or OpenAI) that provides new technology or a partner that provides support capabilities (such as cloud computing or APIs).

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While the potential use cases for generative AI are coming to light quickly, the future of this technology in the apparel and luxury industries is still being stitched together. But experimenting with new tools today means opening infinite possibilities tomorrow.

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[6] Maghan McDowell, "Inside the new look digital clienteling tool," *Vogue Business*, January 11, 2022.
[7] Maghan McDowell, "Exclusive: Lessons from Levi's data science bootcamp," *Vogue Business*, November 8, 2021.